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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,051

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Osamu Suekane

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30593

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EXAMINER

GAMBETTA, KELLY M

ART UNIT

PAPER NUMBER

1792

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,051	<b>Applicant(s)</b> SUEKANE ET AL.	
	<b>Examiner</b> KELLY GAMBETTA	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/24/09 4/24/07 9/23/05</u> .                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims 1-9 and 17-20 in the reply filed on 24 September 2009 is acknowledged.

Claims 10-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 7 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Jin et al. (JP 2001-234341).

As to claim 1, Jin et al. teaches a high efficiency synthesis method of a carbon nanostructure where the raw material gas and the catalyst are brought together with instantaneous contact in paragraphs 0005-0007. The catalyst is on the substrate which is moved into the region containing the raw material, or carbonaceous gas, under reaction conditions. The two meet each other instantaneously the moment the substrate enters into the gas. This is further illustrated in Drawings 1 and 2.

As to claim 2, the catalyst is stationary relative to the substrate in paragraph 0007.

As to claim 3, the catalyst moves from outside the gas to inside the raw material gas to contact it instantaneously as shown in Drawings 1 and 2.

As to claim 4, the raw material gas may be considered 'built up' as broadly as it is claimed as it is largely confined to one area of the chamber as shown in Drawings 1 and 2 and described in the "Mode for carrying out the invention" section. The catalyst moves from outside the gas to inside the raw material gas to contact it instantaneously as shown in Drawings 1 and 2.

As to claim 5, the temperature in the zone of the reaction gas is reaction temperature when the substrate, or catalyst, meets the gas in paragraphs 0008 and 0014.

As to claims 6 and 17-20, the contact between the raw material gas and the catalyst is stopped instantaneously as the catalyst leaves the raw material gas reaction area as shown in Drawings 1 and 2.

As to claim 7, the raw material gas is dispensed using a predetermined flow quantity in paragraph 0019.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. in view of Lee et al. (US 6350488).

As to claims 8-9, Jin et al. teaches using a carrier gas (paragraph 0019), but does not explicitly teach the specifics of reducing or increasing the raw material gas and reducing or increasing the carrier gas proportionately. Lee et al. teaches reducing the raw material gas and increasing the carrier gas accordingly in Figure 7, column 6 lines

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24-33. In this section Lee reduces the raw material gas and replaces it with carrier gas in order to accurately control the length of the carbon nanotubes and stopping undesirable carbon reactions. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jin et al. to include teaches reducing the raw material gas and increasing the carrier gas accordingly as taught by Lee et al. in order to accurately control the length of the carbon nanotubes and stopping undesirable carbon reactions. Further, in the section of column 5 lines 12-20, the carrier gas and the carbon source gas amounts are modified in order to control the carbon nanotubes. Therefore, it would be obvious to modify the relative amounts of carbon and carrier gases by routine experimentation in order to control the growth rate.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY GAMBETTA whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly M Gambetta  
Examiner  
Art Unit 1792

kmg

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792